

# SERVICE MANUAL

## PORTABLE RADIO



# SANYO

# RP8900

(EUROPE)



### SPECIFICATIONS

Frequency range: FM 87.5 — 108 MHz  
 MW 525 — 1605 kHz  
 SW1 5.95 — 6.20 MHz  
 SW2 9.50 — 9.80 MHz  
 SW3 11.70 — 12.00 MHz  
 SW4 15.10 — 15.50 MHz  
 SW5 17.70 — 17.90 MHz  
 SW6 21.45 — 21.75 MHz

#### Intermediate frequency:

MW 460 kHz  
 FM 10.7 MHz

#### ICs:

IC101 AN7213 FM RF Amp & MIX

IC102 AN7223A IF Amp

IC103 BA526 Power Amp

#### Transistor:

Q101 2SK212F SW RF Amp

Q102 2SC930E SW MIXER

Q103 2SC930E SW OSC

Q104 2SK212F SW Buffer Amp

Q301 2SC930E FM IF Amp

Q302 2SC536G Tuning LED Driver

Q303 2SA608F Tuning LED Driver

#### Diode:

D101 GMA01 Electrostatic Protector  
 D102 GMA01 Electrostatic Protector  
 D103 SD115 FM AFC  
 D104 GMA01 Stabilizer  
 D105 GMA01 SW AGC  
 D106 GMA01 SW AGC  
 D107 GMA01 SW AGC  
 D108 SLP155B Tuning LED  
 D109 GMA01 Electrostatic Protector  
 D110 1S2473 Electrostatic Protector

#### Sensitivity:

FM 10 $\mu$ V  
 MW 280 $\mu$ V/m  
 SW1 10 $\mu$ V  
 SW2 10 $\mu$ V  
 SW3 10 $\mu$ V  
 SW4 10 $\mu$ V  
 SW5 10 $\mu$ V  
 SW6 10 $\mu$ V

#### Power Output:

Maximum 600mW  
 Undistorted 400mW

#### Power Source:

DC: 6V for UM-3 x 4  
 EXT DC IN (150V/230V 6V)

#### Speaker:

7.7cm 8 ohm

#### Dimensions:

182(W) x 110(H) x 37 (D) mm

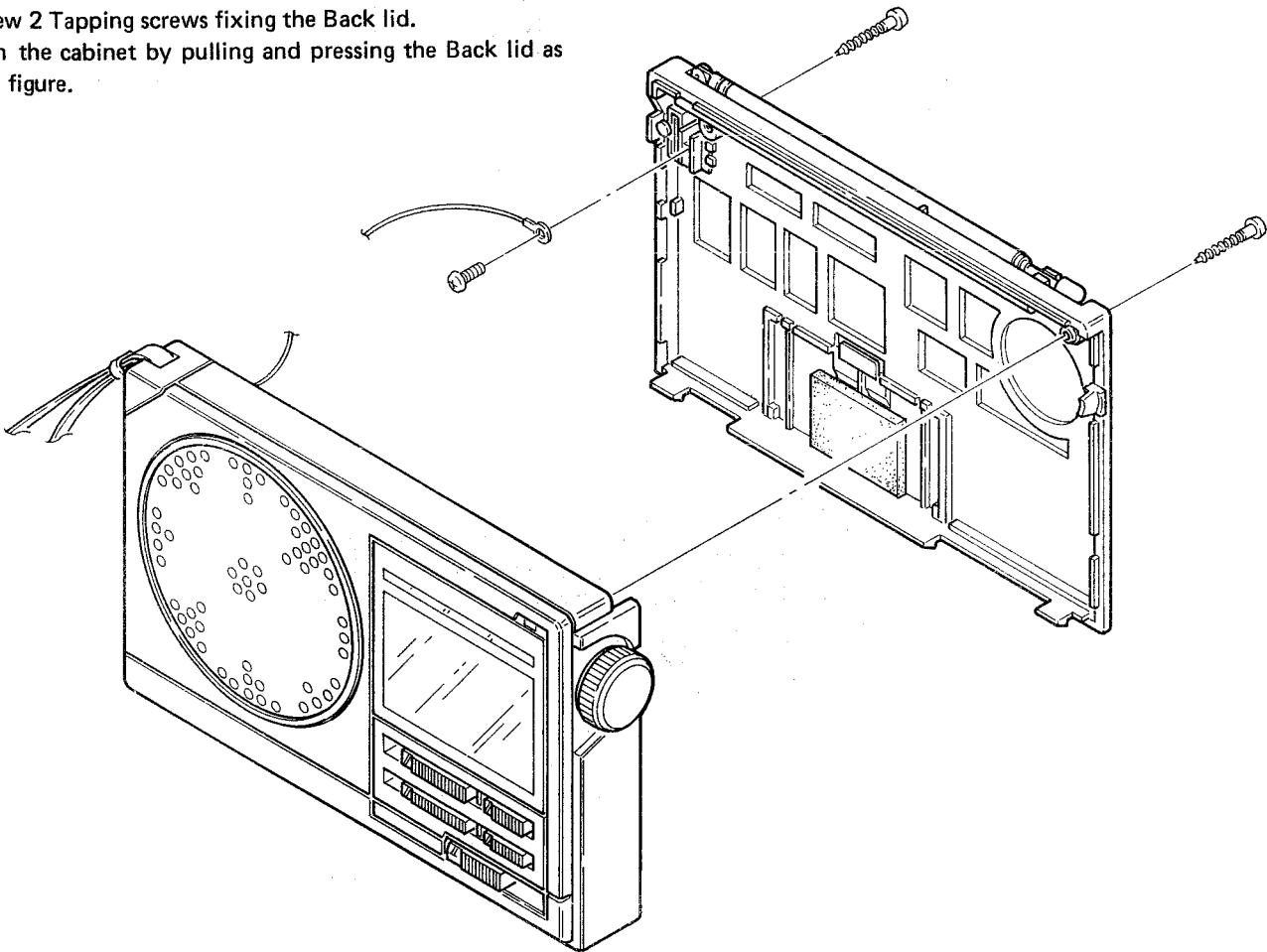
#### Weight:

(With out Batteries) 450 g (Approx.)

WM-10614

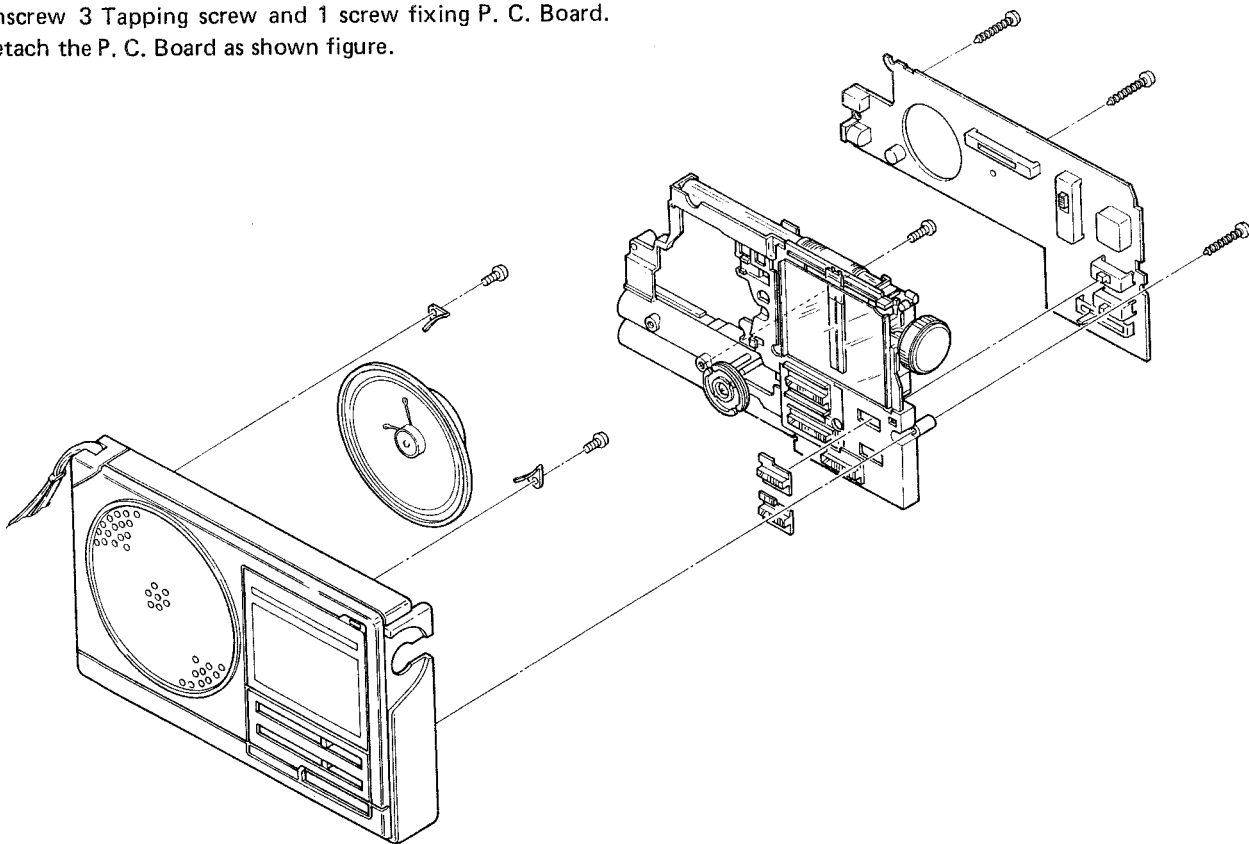
**HOW TO DETACH THE CABINET**

- 1. Unscrew 2 Tapping screws fixing the Back lid.
- 2. Detach the cabinet by pulling and pressing the Back lid as shown figure.



**HOW TO DETACH THE PRINTED CIRCUIT BOARD**

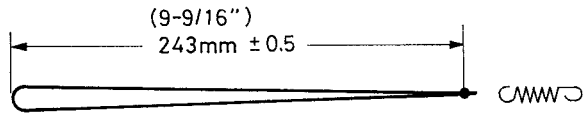
- 1. Unscrew 3 Tapping screw and 1 screw fixing P. C. Board.
- 2. Detach the P. C. Board as shown figure.



## DIAL ROPE STRINGING

### 1. Preparation

Bind the rope to the spring coil so that the turnback length becomes 9-9/16" (243mm).



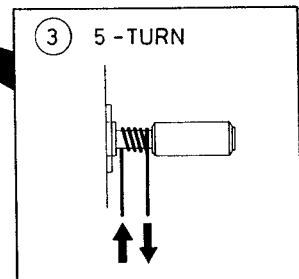
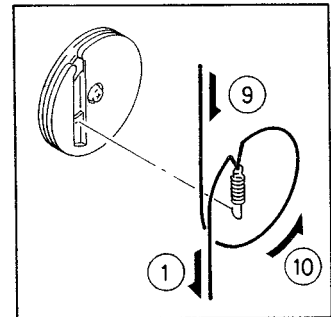
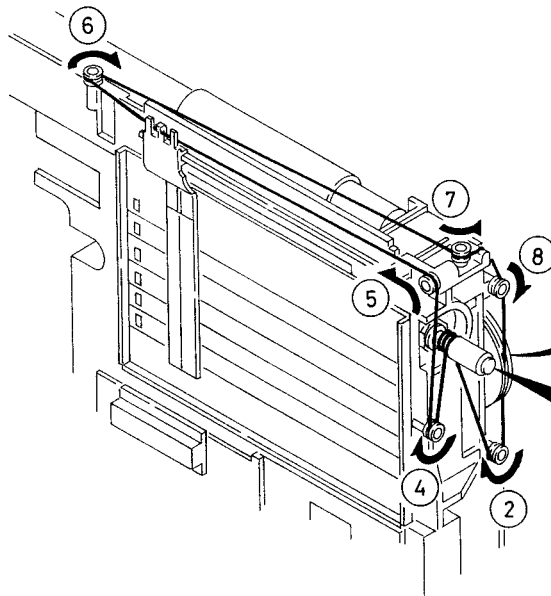
### 2. Procedure

First, hook the spring coil onto the dial drum (1), and from the end of one side the rope, let it pass through (2), (3), (4), (5), (6), (7), and (8).

Next, put the another side of the rope around the drum (9) as shown figure.

Finally, put the rope at position (10).

□ 1	4	m	5.95	6.00
□ 2	3	m	9.50	9.55
□ 3	2	m	17.0	
□ 4	1	m	5.10	15.20



## HOW TO STRING DIAL ROPE FOR SHORT WAVE INDICATION

### 1. Preparation

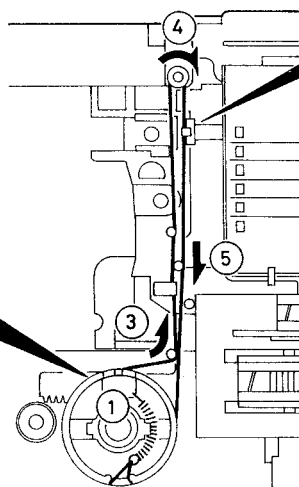
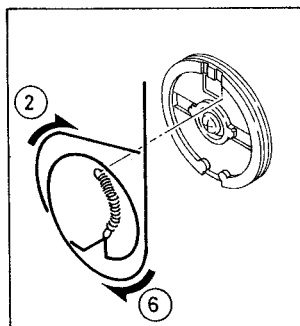
Bind the rope to the spring coil so that the turnback length becomes 6-3/64" (154mm).

### 2. Procedure

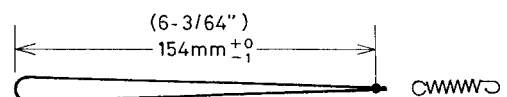
First, hook the spring coil onto the dial drum (1), and from the end of one side the rope, let it pass through (2), (3), and (4).

Next, put the another side of the rope around the drum (5) as shown figure.

Finally, put the rope at position (6).



□ 1	49m
□ 2	31m
□ 3	25m
□ 4	19m
□ 5	16m
□ 6	13m



## ALIGNMENT PROCEDURES

### GENERAL ALIGNMENT CONDITIONS

1. The position of volume control is at maximum position.
2. Signal input must be kept as low as possible to avoid overload.
3. Use an output meter of the highest possible sensitivity.
4. Standard modulation is 1 KHz at 30% amplitude (for AM) and 22.5 kHz deviation (for FM).

#### MW BAND — Band selector switch in MW position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Loop Antenna	460 kHz	Lowest End	Across Speaker	IFT T302	Adjust for Maximum
2	Same	517 kHz	Lowest End	Same	Osc. Coil L104	Same
3	Same	1650 kHz	Highest End	Same	Osc. Trim. VCT2	Same
4	Same	600 kHz	600 kHz	Same	Ant. Coil L103	Same
5	Same	1400 kHz	1400 kHz	Same	Ant. Trim. VCT1	Same

Repeat steps 1 thru 5 to obtain maximum sensitivity.

#### FM BAND — Band selector switch in FM position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Meter or Oscilloscope	Adjust	Remarks
1	Connect Sweep Marker Generator to (H) TP1, (E) TP2.	10.7 MHz	Lowest End	Connect scope Input cable thru network to (H) TP3, (E) TP4	IFT, T301	Adjust for Maximum sensitivity with symmetrical curve
2	Same	10.7 MHz	Lowest End	Connect scope Input cable thru network to (H) TP3, (E) TP4	IFT T303	Adjust for symmetrical "S" curve
3	Connect Signal Generator to (H) TP1, (E) TP2.	87.35 ± 0.15 MHz	Lowest End	Connect V. T. V. M. across speaker	Osc. Coil L102	Adjust for Maximum
4	Same	108.5 ± 0.3 MHz	Highest End	Same	Osc. Trim. CT-2	Same
5	Same	90 MHz	90 MHz	Same	RF Coil L101	Same
6	Same	106 MHz	106 MHz	Same	RF Trim. VCT3	Same

Repeat steps 1 thru 6 to obtain maximum sensitivity.

#### SW1 BAND — Band selector switch in SW1 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	5.930 MHz	Lowest End	Across Speaker	Osc. Coil L113	Adjust for Maximum
2	Same	6.230 MHz	Highest End	Same	Osc. Trim. CT1	Same
3	Same	6.075 MHz	6.075 MHz	Same	Ant. Coil L105	Same

Repeat steps 1 thru 3 to obtain maximum sensitivity.

#### SW2 BAND — Band selector switch in SW2 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	9.650 MHz	Center	Same	Osc. Coil L114	Adjust for Maximum
2	Same	9.650 MHz	9.650 MHz	Same	Ant. Coi. L106	Same

ALIGNMENT PROCEDURES

SW3 BAND — Band selector switch in SW3 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	11.850 MHz	Center	Across Speaker	Osc. Coil L115	Adjust for Maximum
2	Same	11.850 MHz	11.850 MHz	Same	Ant. Coil L107	Same

SW4 BAND — Band selector switch in SW4 position

Step	Connection of Signal Gen.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	15.300 MHz	Center	Same	Osc. Coil L116	Adjust for Maximum
2	Same	15.300 MHz	15.300 MHz	Same	Ant. Coil L108	Same

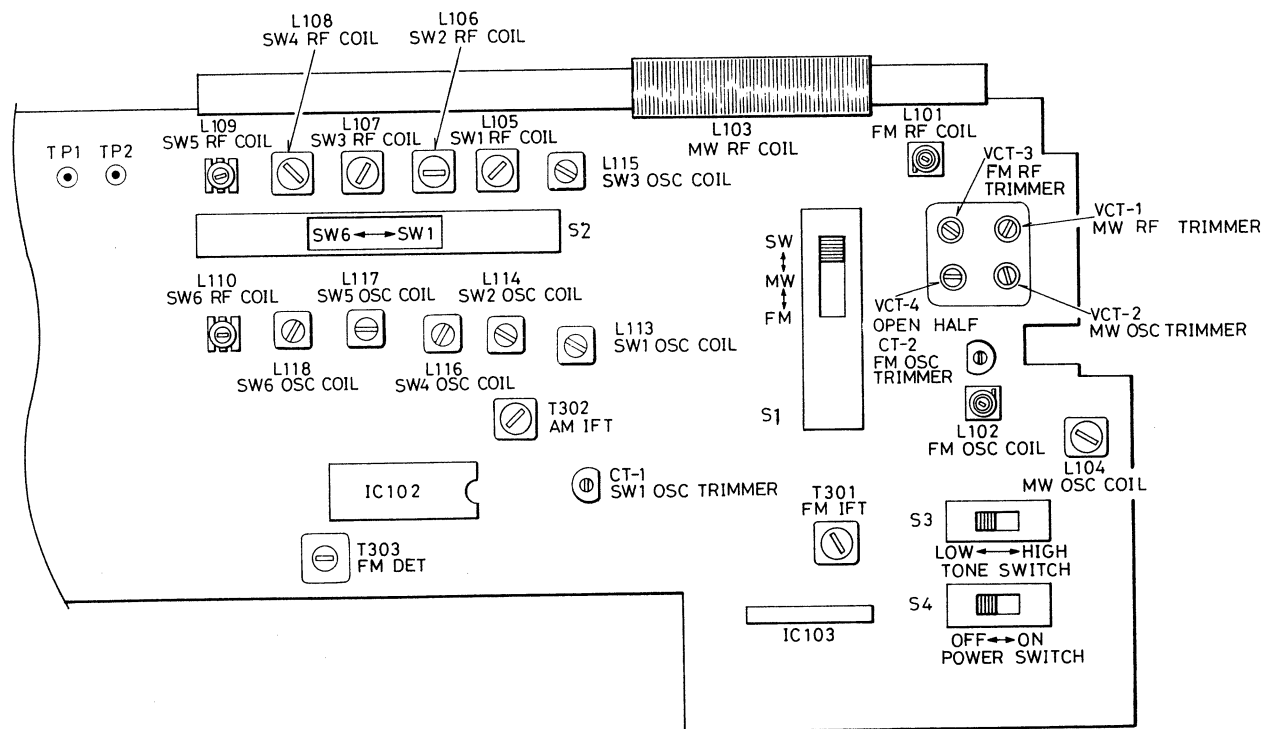
SW5 BAND — Band selector switch in SW5 position

Step	Connection of Signal Grn.	Input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	17.800 MHz	Center	Acroos Speaker	Osc. Coil L117	Adjust for Maximum
2	Same	17.800 MHz	17.800 MHz	Same	Ant. Coil L109	Same

SW6 BAND — Band selector switch in SW6 position

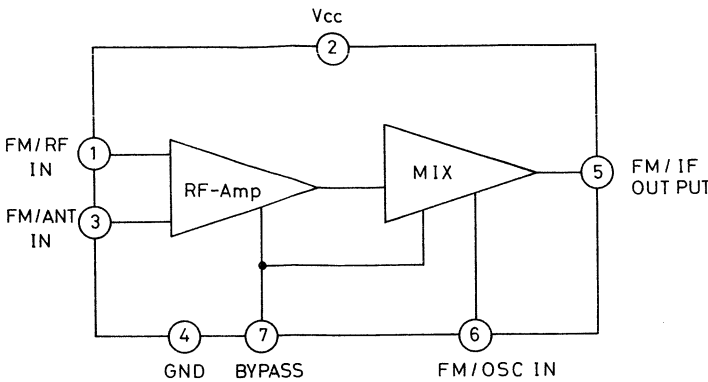
Step	Connection of Signal Gen.	input Signal Frequency	Dial Setting of Radio	Connection of Output Meter	Adjust	Remarks
1	Dummy Antenna	21.600 MHz	Center	Same	Osc. Coil L118	Adjust for Maximum
2	Same	21.600 MHz	21.600 MHz	Same	Ant. Coil L110	Same

PART LOCATION

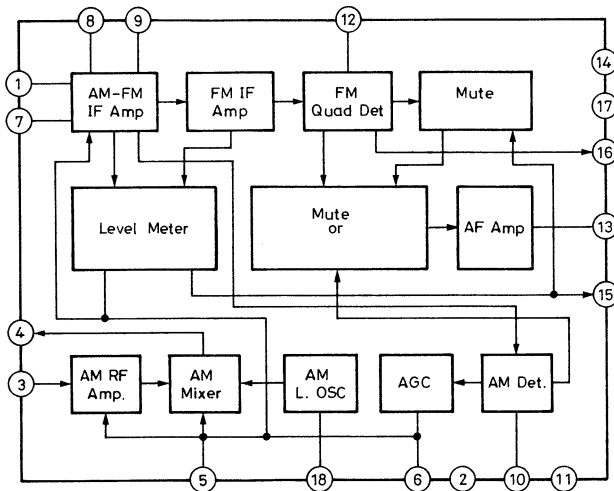


IC BLOCK DIAGRAM

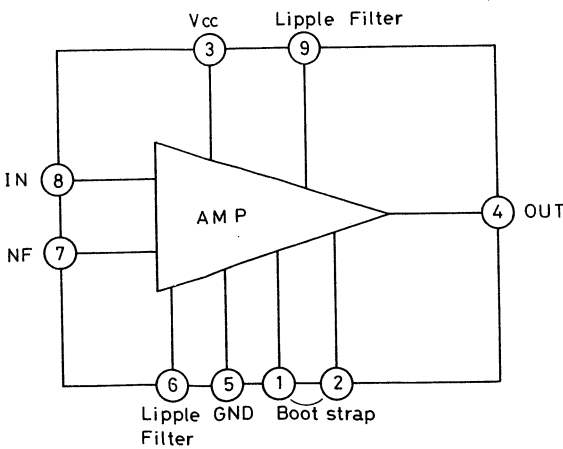
AN7213 (FM RF Amp & MIX)

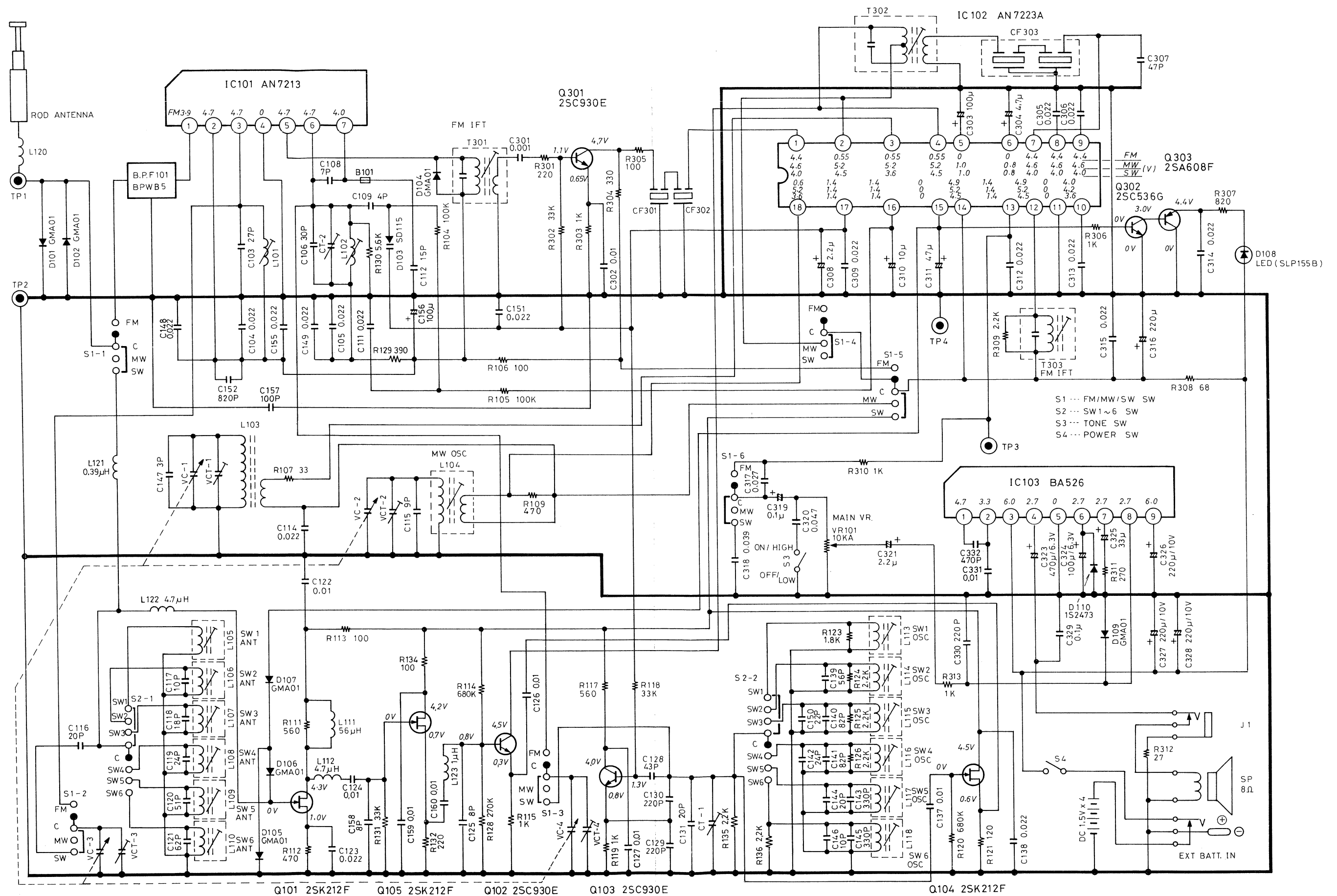


AN7223A (AM-Tuner & FM/AM IF System)

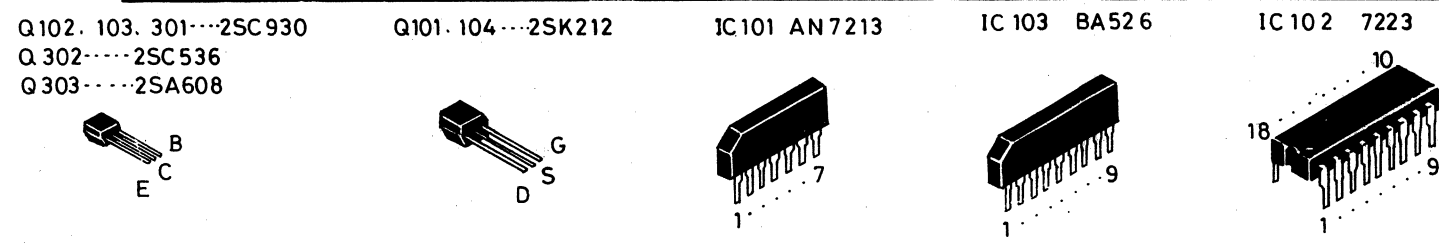


BA 526 (Power Amplifier)





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PARTS LIST

Key. No.	Part No.	Description	Q'ty	Key. No.	Part No.	Description	Q'ty
PACKING				ELECTRICAL PARTS			
	141-6-141T-19002	Display Carton	1		4-244T-06500	Rod Antenna	1
	141-6-144T-90000	Foam Plastic Case, Left	1		4-151T-44100	Speaker	1
	141-6-144T-90100	Foam Plastic Case, Right	1		123-2-472R-00401	Lug	1
	141-6-410T-92202	Instruction Manual	1		4-152T-03101	Earphone	1
	141-6-231T-15305	Inner Poly Cover, Set	1	TUNER P. C. B. ASS'Y			
	141-2-181T-14700	Case	1				
CABINET & CHASSIS							
	141-0-111T-55702	Cabinet Ass'y	1	S3,4	141-4-280T-14100	P. C. Board Ass'y	1
	141-0-126T-42402	Back Lid Ass'y	1	SW1-6, S2	4-231T-81500	Slide Switch, Tone, Power	2
	141-0-128T-20200	Battery Lid Ass'y	1		4-238T-61600	Switch	1
	141-2-372T-04400	Bracket Speaker	2	S1	4-238T-61700	Switch, FM/MW/SW	1
	141-2-732T-13200	Slide, Rod Antenna	1	VR101	4-220T-07400	Variable Resistor, 10K ohm	1
	141-2-661T-37200	Pulley, Rod Antenna	1		4-235R-86100	Socket, Earphone	1
	123-2-472R-00401	Lug, Rod Antenna	1		4-240T-27800	Socket	1
	141-0-163T-94400	Rotary Knob Ass'y, Tuner	1	TP1,2	4-237T-00171	Terminal Board	2
	141-0-311T-44400	Chassis Ass'y	1		141-2-322T-79800	Shield Plate, SW Coil	1
	141-0-566T-14000	Tuning Shaft Ass'y	1		141-2-322T-79900	Shield Plate, IC	1
	141-2-538T-14700	Drum	1		141-2-322T-80300	Shield Plate	1
	141-2-511T-25900	Pointer	1		141-2-322T-80700	Shield Plate	1
	141-0-661T-35200	Pulley Ass'y	7	B101	123-2-471R-10900	Core	1
	141-2-146T-31901	Dial Scale	1		4-224T-22600	Variable Capacitor	1
	141-2-340T-02530	Rope	1	BPF101	4-253T-13471	Filter	1
	141-2-856T-20300	Spring Coil, Rope	1	L101	4-265T-59630	V. H. F. Coil	1
	141-2-164T-32100	Slide Knob, Power & Tone	2	L102	4-265T-59830	V. H. F. Coil	1
	141-2-164T-32200	Slide Knob, Band Switch	2	L103	4-257T-54100	Antenna Coil	1
	141-2-164T-32300	Slide Knob, Volume	1	L104	4-258T-44610	O. S. C. Coil	1
	141-2-732T-13300	Slide, Band Switch (FM-MW-SW)	1	L105	4-257T-59040	Antenna Coil	1
	141-2-742T-99100	Lever, Band Switch (FM-MW-SW)	1	L106	4-257T-53640	Antenna Coil	1
	141-2-245T-13100	Back Plate, Band Switch (FM-MW-SW)	1	L107	4-257T-53740	Antenna Coil	1
	141-2-732T-13400	Slide, Short Wave	1	L108	4-257T-53840	Antenna Coil	1
	141-2-538T-14800	Drum, Short Wave	1	L109	4-257T-53940	Antenna Coil	1
	141-2-511T-26000	Pointer, Short Wave	1	L110	4-257T-54040	Antenna Coil	1
	141-2-340T-02530	Rope, Short Wave	1	L111	4-252T-03910	Choke	1
	141-2-856T-20400	Spring Coil, Short Wave	1	L112,122	4-253T-04816	Filter	1
	141-2-742T-99200	Lever, Short Wave	1	L121	4-253T-14803	Filter	1
	141-2-732T-13500	Slide, Short Wave	1	L123	4-253T-14808	Filter	1
	141-0-210T-45500	Bracket Ass'y, Short Wave	1	L113	4-258T-45840	O. S. C. Coil	1
	141-2-241T-26000	Veil, Band Switch	1	L114	4-258T-41440	O. S. C. Coil	1
	141-2-336T-20100	Terminal Battery, (+)	1	L115	4-258T-41540	O. S. C. Coil	1
	141-2-336T-25400	Terminal Battery, (+) (-)	1	L116	4-258T-41640	O. S. C. Coil	1
	141-2-336T-24900	Terminal Battery, (-)	1	L117	4-258T-41740	O. S. C. Coil	1
	141-2-345T-00100	Steel Ball, Band Switch Step	2	L118	4-258T-41840	O. S. C. Coil	1
	141-2-856T-20500	Spring Coil, Band Switch Step	2	L120	4-265R-12500	V. H. F. Coil	1
	141-2-157T-37800	Inlay, Power Slide Knob	1	CT1	4-224T-15471	Trimmer, 30p	1
	141-2-327T-30100	Insulator, Shield Plate	1	CT2	4-224T-15571	Trimmer, 11p	1
	141-2-327T-30400	Insulator, Shield Plate	1		4-256T-80400	I. F. Filter 10.7M, Red	} or 2
FIXING PARTS				CF301,302	4-256T-80471	I. F. Filter 10.67M, Blue	
					4-256T-80472	I. F. Filter 10.73M, Orange	
					4-256T-80473	I. F. Filter 10.64M, Black	
					4-256T-80474	I. F. Filter 10.76M, White	}
				CF303	4-256T-83371	I. F. Filter (468 kHz)	
				T301	4-256T-26940	I. F. T	
				T302	4-256T-29610	I. F. T	
				T303	4-256T-26810	I. F. T	1
				IC101		IC AN7213	1
				IC102		IC AN7223A	1
				IC103		IC BA526	1
				Q101,104,105		Transistor, 2SK212 F1	3
				Q302		Transistor, 2SC536 AUD	1
				Q303		Transistor, 2SA608	1
				Q301		Transistor 2SC930 IF	1
				Q102,103		Transistor 2SC930 E1 CONV	2
				D108		LED SLP155B Red	1
				D103		Varactor Diode SD115	1
				D101,102,104,105,106,107		Diode GMA01	6
				D109		Diode GMA01	1
				D110		Diode 1S2473	1
				RESISTORS			
					All Resistors are Carbon T-type $\pm 5\%$ 1/6W, unless otherwise noted.		
				R106,134		100 ohm	2
				R107		33 ohm	1
				R109		470 ohm	1
				R111,117		560 ohm	2
				R112		470 ohm	1
				R114,120		680K ohm	2
				R119		1K ohm	1

PARTS LIST

Key. No.	Part No.	Description	Q'ty	Key. No.	Part No.	Description	Q'ty
TUNER P. C. B. ASS'Y				TUNER P. C. B. ASS'Y			
		RESISTORS				CAPACITORS	
		All Resistors are Carbon T-type $\pm 5\%$ 1/6W, unless otherwise noted.					
R303,306,310		1K ohm	3	C131		Ceramic 20pF (N750) $\pm 5\%$ 50V	1
R118		33K ohm	1	C152		Ceramic 820pF $\pm 10\%$ 50V	1
R131		33K ohm	1	C106		Ceramic 30pF (N220) $\pm 5\%$ 50V	1
R129		390 ohm	1	C148		Ceramic 0.022 $\mu$ F +80-20% 50V	1
R130		5.6K ohm	1	C143,145		P P Con 330pF $\pm 5\%$ 100V	2
R124,125,126,135		2.2K ohm	4	C318		BC Con 0.039 $\mu$ F $\pm 10\%$ 25V	1
R309,136		2.2K ohm	2	C323		Capacitor 470 $\mu$ F 6.3V	1
R121		120 ohm	1	C147		Ceramic 3pF $\pm 0.25$ pF 50V	1
R307		820 ohm	1	C129,130		Ceramic 220pF $\pm 5\%$ 50V	2
R312		27 ohm	1	C139		Ceramic 56pF $\pm 5\%$ 50V	1
R313		1K ohm P-type	1	C128		Ceramic 43pF $\pm 5\%$ 50V	1
R311		270 ohm	1				
R128		270K ohm V-type	1				
R104,105		100K ohm V-type, $\frac{1}{4}$ W	2				
R115		1K ohm V-type $\frac{1}{4}$ W	1				
R123		1.8K ohm V-type $\frac{1}{4}$ W	1				
R305,104,105,113		100 ohm V-type $\frac{1}{4}$ W	4				
R302,118		33K ohm V-type $\frac{1}{4}$ W	2				
R304		330 ohm V-type $\frac{1}{4}$ W	1				
R308		68 ohm V-type $\frac{1}{4}$ W	1				
R127		56K ohm V-type $\frac{1}{4}$ W	1				
R301,132		220 ohm V-type $\frac{1}{4}$ W	2				
		CAPACITORS					
		4-223T-14800					
C326,327,328,316		Capacitor 220 $\mu$ F 10V	4				
C304		Electrolytic 4.7 $\mu$ F 50V	1				
C308		Electrolytic 2.2 $\mu$ F 50V	1				
C310		Electrolytic 10 $\mu$ F 16V	1				
C311		Electrolytic 47 $\mu$ F 6.3V	1				
C303,324,156		Electrolytic 100 $\mu$ F 6.3V	3				
C321		Electrolytic 2.2 $\mu$ F 25V	1				
C319		Electrolytic 0.1 $\mu$ F 25V	1				
C325		Electrolytic 33 $\mu$ F 6.3V	1				
C301		BC Con 0.001 $\mu$ F $\pm 10\%$ 25V	1				
C104,105,111		BC Con 0.022 $\mu$ F $\pm 20\%$ 25V	3				
C149,155,151,114,123		BC Con 0.022 $\mu$ F $\pm 20\%$ 25V	5				
C138,309,312,313		BC Con 0.022 $\mu$ F $\pm 20\%$ 25V	4				
C305,306,314,315		BC Con 0.022 $\mu$ F $\pm 10\%$ 25V	4				
C302,137,124,159,160		BC Con 0.01 $\mu$ F $\pm 10\%$ 25V	5				
C126,127,122,331		BC Con 0.01 $\mu$ F $\pm 10\%$ 25V	4				
C320		BC Con 0.047 $\mu$ F $\pm 20\%$ 25V	1				
C317		BC Con 0.027 $\mu$ F $\pm 10\%$ 25V	1				
C329		BC Con 0.1 $\mu$ F $\pm 10\%$ 25V	1				
C103		Ceramic 27pF $\pm 10\%$ 50V	1				
C108		Ceramic 7pF (NPO) $\pm 0.25$ pF 50V	1				
C122		Ceramic 15pF (NPO) $\pm 10\%$ 50V	1				
C322		Ceramic 470pF $\pm 10\%$ 50V	1				
C109		Ceramic 4pF (NPO) $\pm 0.25$ pF 50V	1				
C307		Ceramic 47pF $\pm 10\%$ 50V	1				
C115		Ceramic 9pF $\pm 10\%$ 50V	1				
C116		Ceramic 20pF $\pm 5\%$ 50V	1				
C125,118,158		Ceramic 8pF $\pm 10\%$ 50V	3				
C330		Ceramic 220pF $\pm 10\%$ 50V	1				
C119		Ceramic 15pF $\pm 10\%$ 50V	1				
C120		Ceramic 39pF $\pm 10\%$ 50V	1				
C121		Ceramic 51pF $\pm 5\%$ 50V	1				
C140,141		Ceramic 82pF (NPO) $\pm 5\%$ 50V	2				
C150		Ceramic 22pF $\pm 10\%$ 50V	1				
C142		Ceramic 24pF $\pm 10\%$ 50V	1				
C144		Ceramic 20pF $\pm 10\%$ 50V	1				
C146		Ceramic 10pF $\pm 10\%$ 50V	1				

SANYO ELECTRIC TRADING CO., LTD.  
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